

# Rabies Response Plan

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**Prepared by:  
Nova Scotia Zoonotic Diseases Technical Working Group**

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# RABIES RESPONSE PLAN

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## 1.0 INTRODUCTION

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The prevention and control of rabies in Nova Scotia (NS) requires a collaborative and coordinated approach involving various agencies. An interdepartmental provincial Zoonotic Diseases Technical Working Group provides expert advice and informs the development of the Rabies Response Plan.

Provided in the Rabies Response Plan is background information on rabies in NS and guidelines on risk assessment, risk reduction and management of animals and humans with potential and confirmed cases of rabies. The Department of Health and Wellness (DHW), Department of Lands and Forestry (DLF), and NS Department of Agriculture (NSDA) have developed a program to address the collection and processing of animal specimens which is described in this Response Plan. The document also outlines the procedures for authorization and dispensing of Rabies Post Exposure Prophylaxis (RPEP) biologicals, obtaining additional RPEP biologicals during “after-hours” situations, and reporting requirements for the DHW.

The guidelines may be used to supplement other agencies’ rabies prevention policies. The rabies program, inclusive of the Rabies Response Plan, will be reviewed, updated annually or as needed when issues arise.

## 2.0 GOAL AND OBJECTIVES

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Goal: To reduce the risk of rabies infection to humans and animals in NS.

Objectives:

1. To ensure that a working group with the necessary expertise and representation from the appropriate departments is in place to plan for and respond to rabies related issues in NS.
2. To maintain a surveillance system to detect rabies virus in NS in animals and humans, as feasible.
3. To provide information to the public regarding rabies and to influence behavioural change towards personal protection against animal bites and exposures that increase the risk of rabies.
4. To provide information to health professionals regarding rabies.
5. To keep Nova Scotians informed about rabies activity in NS.
6. To recommend rabies control measures, as needed, based on assessment of risk and the many other factors related to rabies control.

## 3.0 BACKGROUND

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Domestic and wild animals such as foxes, coyotes, bobcats, skunks, bats, raccoons, and other wildlife can serve as vectors for rabies virus. Rats, rabbits, squirrels and mice are rarely infected. Domesticated animals such as dogs, cats, ferrets, and some livestock may be at risk of contracting rabies if exposed to infected animals and then pose a further risk to their owners and the public. The virus is present in the brain tissue of the infected animal and can be secreted in the saliva. The virus can be transmitted by a bite from an infected animal. Additionally, rabies virus can be transmitted when infected saliva, brain and other nervous tissue comes into contact with a scratch, open wound or the mucous membranes of the mouth, nasal cavity or eyes.

Bat Strain rabies is endemic at low levels in the resident bats in NS and is also present in some migratory bats. Raccoon rabies is present in eastern Maine and southwestern New Brunswick (NB). The part of this plan which will deal with preparedness and response to an outbreak of rabies in a terrestrial wildlife species is under development.

### 3.0 Clinical Picture

Rabies almost always causes death. The incubation period in humans after being bitten by an infected animal is usually 3-12 weeks. Although uncommon, the incubation period may be as short as several days or as long as a year or more. The incubation period is often influenced by the severity and site (in relation to nerve supply and proximity to the brain) of the wound. Symptoms in humans can include acute febrile illness with headache, fever, malaise, sensory changes at the bite site and increasing apprehension. These symptoms will progress to acute encephalomyelitis and central nervous system change, including paresis or paralysis, dysphagia and convulsions. Death usually results from respiratory paralysis and cardiac failure.

The period of communicability in dogs, cats and ferrets is considered to be 10 days before the signs of illness and for the entire course of the disease. The period of communicability is not well known in other species, including wildlife and livestock, and for this reason, a more conservative 14 days clinical investigation is recommended. Initial clinical signs of rabies in animals may be nonspecific and include lethargy, fever, vomiting, and anorexia. Signs progress within days to cerebral dysfunction, cranial nerve dysfunction, ataxia, weakness, paralysis, seizures, difficulty breathing, difficulty swallowing, excessive salivation, abnormal behavior, aggression, and/or self-mutilation.

The following fact sheet describes the clinical signs of rabies in animals: [inspection.gc.ca/animals/terrestrialanimals/diseases/reportable/rabies/fact-sheet/eng/1356155202013/1356155379445](https://inspection.gc.ca/animals/terrestrialanimals/diseases/reportable/rabies/fact-sheet/eng/1356155202013/1356155379445)

### 3.1 Epidemiology

Across Canada, about 200 animals are found to have rabies each year. Most of these are wild animals, mainly bats, skunks, raccoons, and foxes. Some are farm animals, mostly cows and horses, and some are pets, especially cats and dogs.

Since 1998, there have been 7 laboratory-confirmed cases of rabies in animals in NS. These cases include: one bat in 2012, one bat in 2010, two foxes in 2007, one cat in 2003, and two

bats in 2000. All of these were caused by bat variant rabies viruses. There has been one death in NS from rabies since reporting began in 1924.

Rabies cases due to the raccoon-variant rabies virus have not been detected in NS, but the bordering province of NB has had a recent incursion of raccoon variant rabies in 2014. Since August of 2015, the NB Department of Agriculture, Aquaculture and Fisheries in cooperation with the Department of Energy and Resource Development, Department of Health and the Ontario (ON) Ministry of Natural Resources and Forestry Aviation Services Division have implemented an annual oral rabies vaccination program in an effort to control raccoon-variant rabies in southwestern NB. Since the incursion, 2 cases were found in 2014, 24 cases occurred in 2015, 1 case in 2016, 4 cases in 2017 and 0 cases in 2018. Of the 31 cases of raccoon-variant rabies reported in NB, 26 cases were in raccoons and 5 in striped skunks.

## 4.0 KEY ELEMENTS OF THE RABIES RESPONSE PLAN

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The key elements of the NS Response Plan for rabies are noted below. Activities for the start of each year are outlined along with a response if rabies activity is detected.

### 4.1 Nova Scotia Zoonotic Diseases Technical Working Group

The NS Zoonotic Diseases Technical Working Group consists of experts in wildlife, animal and human health, who are working together from a One Health approach to ensure consistency and coordination to protecting Nova Scotians from rabies. This group of experts is responsible for informing, developing and implementing this Rabies Response Plan and for the ongoing assessment of risk to Nova Scotians. Members represented on the working group have different roles and responsibilities. Representatives from the Office of the Chief Medical Officer of Health (OCMOH), DHW, coordinate and co-chair the Zoonotic Diseases Technical Working Group. The group meets to monitor all activities related to the response plan.

NS works with the other Atlantic Provinces to share expertise and resources in this area. The Zoonotic Diseases Technical Working Group collaborates with the Public Health Agency of Canada (PHAC) and provincial/territorial partners.

### 4.2 Human Illness Surveillance, Investigation, and Management

Rabies is a Notifiable Disease in NS. Health care providers and laboratories are required to report all confirmed and suspected cases of human rabies illness to local Public Health (PH) in the Nova Scotia Health Authority (NSHA). Providers should also report suspected human exposures to rabies. PH in the NSHA will initiate investigation of the case. It is the expectation that PH in the NSHA understand local trends in rabies investigations.

DHW is responsible for providing program response and support to PH case management of humans with rabies and investigation of suspect exposures to rabies. Details on PH investigation and management of human rabies and rabies exposure investigations can be found in [Appendix A](#), "Public Health Management and Response in Potential Rabies Investigations involving Human Exposure".

Procedures for surveillance and reporting of human rabies cases including the case definition, can be found in the NS Surveillance Guidelines for Notifiable Diseases and Conditions, available at: [novascotia.ca/dhw/populationhealth/diseases-and-conditions-A-Z.asp](http://novascotia.ca/dhw/populationhealth/diseases-and-conditions-A-Z.asp)

Descriptive statistics on suspect and confirmed rabies exposure investigations are available to the Zoonotic Diseases Technical Working Group for review as needed.

### 4.3 Animal Surveillance

In Canada, wildlife species are the reservoirs for rabies virus variants, and therefore, surveillance for rabies has typically focused on raccoons, skunks, foxes and bats. A rabies surveillance program is important for the early detection of rabies in an area to allow for a rapid control response.

In NS, a public health surveillance program involving the testing of animals involved in human exposures as directed by a Medical Officer of Health (MOH), was reinstated on April 1, 2016.



DLF opportunistically collects animals for testing based on public reporting of raccoons and other wildlife acting aggressively and/or erratically. DLF and DHW participate in multi-jurisdictional networking opportunities to share information and plans with respect to surveillance activities. Several NS DLF staff members have completed direct rapid immunohistochemical test (dRIT) training, a surveillance rabies test which can be used in non-human exposure situations. Currently this test is available only from the Canadian Wildlife Health Cooperative Laboratory located at the Atlantic Veterinary College. It is anticipated that DLF will soon be equipped to deliver this procedure, which will assist with the surveillance efforts.

Rabies in animals is a reportable disease in Canada. Veterinary laboratories in the province that diagnose a case of rabies or suspect case of rabies in a domestic animal must immediately notify the local MOH in the NSHA. Contact information for the local MOH can be found <https://novascotia.ca/dhw/publichealth/cpho-contact-information.asp>

Additionally, NSDA will notify the local MOH in the NSHA if any cases of rabies are diagnosed or highly suspected.

For after hours and weekend reporting contact the MOH on-call through QE-II locating:

Phone: **(902) 473-2222**

If a case of terrestrial rabies is suspected or identified, the local MOH must immediately notify the OCMOH: **Phone: 902-424-2358**

#### **4.4 Public Awareness and Education**

Actions taken by the general public play an important role in preventing human cases of rabies. The public is provided with information on rabies including symptoms and how to avoid unprovoked animal encounters.

See **Section 9.0** for the detailed Communications Plan.

The DHW **website** includes information on rabies.

The DLF **website** includes information on living with wildlife.

The public can get information on human health aspects of rabies by calling local PH, in the NSHA.

Press releases and media will keep the public updated during the summer months as needed.

#### **4.5 Information for Health Professionals**

Health care providers are informed that rabies is reportable in NS under the Health Protection Act and the MOH or delegate is available to assist health care providers with the risk assessment for rabies when treating bites and wounds related to animal exposures. A poster entitled, "Rabies: How to assess animal bites OR concerns about rabies exposure" is available to assist health care providers with their assessment related to animal bites and is available in **Appendix H** and on the DHW website at the following link: [novascotia.ca/dhw/cdpc/info-for-professionals.asp](https://novascotia.ca/dhw/cdpc/info-for-professionals.asp)

## 4.6 Diagnostic Testing for Human Illness

If rabies is suspected, the microbiologist on call at the QEII should be contacted immediately through the hospital switch board. Rabies testing for a suspected human case is coordinated through the QEII anchor laboratory for the Provincial Public Health Laboratory Network and sent to the appropriate reference laboratory. Please contact the QEII laboratory for shipping requirements.

The following are specimens and tests used for the diagnosis of rabies in humans:

- **full thickness biopsy of skin at nape of the neck:** Specimen must be at least 5mm in diameter and **MUST** include hair follicles. Place specimen in a sterile container on a piece of gauze moistened with sterile saline to maintain the integrity. Ship to QEII anchor laboratory at 4°C or -20°C. Specimen will be sent to the Canadian Food Inspection Agency (CFIA) for Reverse transcriptase polymerase chain reaction (RT-PCR) and direct fluorescent antibody test (FAT).
- **Saliva:** Multiple collections of 2-3 mls each should be obtained at least 12 hours apart. Ship specimen to the QEII anchor laboratory at -20°C or lower. Specimens will be sent to the CFIA for RT-PCR.
- **Cerebral Spinal Fluid (CSF):** Send TWO aliquots of 2 and 1 ml respectively to the QEII anchor laboratory at -20°C or lower. One specimen will be sent to CFIA for RT-PCR testing and one will be sent to the NML for Virus neutralization test (e.g. RFFIT) to detect neutralizing antibody.

Note: Serum is of limited value, particularly if the patient has received vaccination in the past. Please contact a microbiologist for further information.

## 4.7 Rabies Control Measures in Wildlife

Experience in ON, Quebec (QC), and NB, as well as in the US has shown that effective outbreak response requires pre-planning and preparedness. The Zoonotic Diseases Technical Working Group and provincial departmental discussions will continue to examine and put forth recommendations on appropriate measures for outbreak response preparedness in NS.

A number of factors need to be weighed for consideration of wildlife rabies outbreak response and vaccination programs:

- Probability of human cases of rabies
- Probability of pet exposures and subsequent risk to humans
- Probability of farm animal exposure and subsequent risk to humans
- Wildlife species in which rabies has been identified
- Number of cases confirmed
- Time of the year, which impacts mobility and habitat of animals
- Population density of the species in which rabies has been confirmed and potential for spread

- Probability that abatement will work in that area
- Density of human population

If necessary, the Zoonotic Diseases Technical Working Group will make a recommendation regarding wildlife vaccine programs consulting external experts as needed. The recommendation for such an initiative would require joint approval by the provincial departments of all working group representatives.

DLF will lead any wildlife rabies outbreak response and vaccination program.

## 5.0 ROLES AND RESPONSIBILITIES

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The NS Rabies Program represents a collaborative approach involving various departments and organizations of which the roles and responsibilities are outlined below.

### 5.1 Roles and Responsibilities of PH in the NSHA, DHW, DLF, and NSDA re Testing of Animal Specimens from Human Exposures

An Agreement in Principle between DHW, DLF, and NSDA is the foundation document outlining the roles and responsibilities agreed upon pertaining to the collection, transportation, processing, and shipping, for diagnostic testing of animal specimens with human exposure.

The following documents outline operational procedures for testing an animal for rabies when deemed necessary by an MOH:

- “Departmental Roles in the Testing of Animals involved in<sup>1</sup> Category II and III Human Exposures to Potentially Rabid Animals” ([Appendix B](#)).
- Nova Scotia Rabies Response Program Roles and Responsibilities (with specific actions) ([Appendix C](#)).
- Contact information for PH, DLF and NSDA staff during and after normal working hours ([Appendix D](#)).

### 5.2 Canadian Food Inspection Agency (CFIA), Ottawa

Testing of animal and human specimens for rabies in NS is conducted at the CFIA Ottawa Laboratory–Fallowfield (OLF) in Ottawa, ON. Disease risk assessment, collection and submission of samples to CFIA-OLF and subsequent disease control measures are conducted by provincial authorities.

### 5.3 First Nations and Inuit Health Branch (FNIHB)

If a member of First Nations community is exposed to an animal that may be infected with rabies, they should report the incident to:

- The nearest Emergency Department or Health Centre. The exposure should also be reported to the Environmental Health Officer (EHO), Indigenous Services Canada–First Nations and Inuit Health Branch (ISC-FNIHB).
- The EHO will notify the local PH office of the exposure. PH will liaise with the EHO, FNIHB if the incident involves a First Nation individual or happens on First Nation lands.
- The EHO will work with the local PH office and the implicated First Nation community to complete any on-reserve animal bite incident investigation using the provincial protocol.
- DLF will provide assistance (as able) to the EHO for capture of animals.

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<sup>1</sup> The following categories of exposure are from the WHO Expert Consultation on Rabies (3rd Report, 2018):

**Category I** – touching or feeding animals or licks on intact skin.

**Category II** – nibbling of uncovered skin, minor scratches or abrasions without bleeding.

**Category III** – single or multiple transdermal bites or scratches, licks on broken skin, contamination of mucous membrane with saliva from licks, and exposure to bats.

### There are three Health Canada EHOs in Nova Scotia:

Sydney Location	902-270-8558	Responsible for First Nations communities in Cape Breton
Pictou Location	902-752-0085	Responsible for Afton, Pictou Landing, Indian Brook, Millbrook and Shubenacadie.
Halifax Location	902-426-4645	Responsible for the Western part of the province (Valley, South Shore, Yarmouth area).

## 5.4 Municipalities

If a municipality employs animal control staff, PH may request their assistance in following up suspect rabies exposures from stray, feral, and domestic animals. In situations where potential rabies exposures to humans have occurred from domestic animals, PH may need to request that Bylaw officers and/or animal control staff arrange for observation of an animal rather than immediate euthanization.

## 6.0 RISK ASSESSMENT AND NEED FOR Rabies Post Exposure Prophylaxis (RPEP)

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Overall, in NS, the presumed risk is low for exposures to rabies virus-infected animals, but the potential is present. Proximity to provinces with known histories of rabies in wildlife as well as inter-provincial and international transport of goods and products via rail, air, water, and land into the province can potentially introduce animals with rabies into the province.

In the event of an exposure where transmission to humans may be possible, PH is available to assist health care providers with the risk assessment for rabies when treating bites and wounds related to animal exposures (including providing advice on the need for Rabies Post Exposure Prophylaxis (RPEP) and ensuring that required RPEP biologicals are provided and administered).

The assessment of all suspect rabies exposures by PH should include the evaluation of the following risk factors:

- a. The nature of the exposure (including bite or non-bite, severity and location of the wound),
- b. The type of animal, including the risk of rabies in the animal species involved,
- c. Behaviour of the animal (provoked or unprovoked attack) at the time of the bite.
- d. Vaccination status of the domestic animal
- e. Availability of the animal for observation
- f. Results of the laboratory testing
- g. Age of the exposed person

To help inform the risk assessment involving wildlife, the MOH/delegate may consult the Canadian Wildlife Health Cooperative, Atlantic Veterinary College (CWHC-AVC) to obtain veterinary medical expert advice, as appropriate (personal correspondence from Dr. Strang, April 7, 2015). This would be in addition to consulting DLF wildlife staff regarding human exposures involving wildlife.

CWHC-AVC provides veterinary medicine expertise to the MOHs/delegates regarding:

1. Interpretation of animal behavior (see [Section 6.3](#))
2. The appropriate observation period
3. Rabies outbreaks
4. Other unusual or specialized animal rabies issues

Once a decision is made that the client requires prophylaxis, both Rabies Immune Globulin (RIG) and rabies vaccine should be given to previously unvaccinated clients. Those individuals previously appropriately immunized with rabies vaccine may require fewer doses of vaccine and not RIG – this will be determined in the assessment of the situation. For further information regarding RPEP requirement for unimmunized and previously immunized individuals consult the [Canadian Immunization Guide](#).

## 6.1 The Nature of Exposure

Rabies is caused by a virus that is present in the saliva or other potentially infectious materials such as the brain tissue of infected animals. Transmission occurs when virus-laden saliva of a rabid animal is introduced by a bite or scratch through intact skin or onto mucous membranes or there is similar contact with infectious nervous tissue. If it can be confirmed that there is no such exposure, post-exposure prophylaxis is not indicated.

Person-to-person transmission has been documented with organ transplantation from undiagnosed infected individuals. Transmission is also theoretically possible through exchange of saliva with an infected individual, but this has not been documented.

### 6.1.1 Bites

- Rabies is most commonly transmitted through bites (any penetration of the skin by teeth).
- Bites from bats may not always be apparent; therefore, it is important to obtain details on whether there was direct contact with a bat and a bite, scratch or saliva exposure into a wound or mucous membrane cannot be ruled out. See [Section 6.1.2](#) for further information on direct contact.
- A bite with prominent salivary contamination (i.e. through exposed skin) is more likely to produce rabies than one through thick clothing that removes saliva from the animal's teeth. Multiple bites are more likely to transmit the disease than a single bite.
- The severity of the wound, the site of the wound in relation to the richness of the nerve supply, and its distance from the brain can influence the incubation period. It has been reported that the incubation period may be shorter when the site of the bite is on the head than when it is on an extremity. Bites on the face are more likely to result in disease than those on the extremities.
- When a domestic animal has inflicted a facial bite, PH staff may decide to initiate RPEP before the end of a 10-day observation period (due to distance from the brain and influence on the incubation period) (see [Section 6.4.1](#) and [7.2](#)).

### 6.1.2 Non-Bite Exposures

- "Non-bite" contamination of scratches, abrasions and open wounds or mucous membranes by saliva or other potentially infectious material, such as the brain tissue of a rabid animal, can transfer the virus. Potential exposures may also include inhalation of aerosolized virus by spelunkers exploring bat-infected caves or laboratory personnel homogenizing tissues infected with rabies.
- When direct contact between a human and a bat has occurred, RPEP should be considered, when both of the following conditions apply:
  - There has been direct contact with a bat; and
  - A bite, scratch, or saliva exposure into a wound or mucous membrane cannot be ruled out.

"Direct contact is defined as the bat touching or landing on a person. The National Advisory Committee on Immunization (NACI) does not recommend RPEP when there is no contact involved. Any direct contact of a bat with skin or mucous membranes is considered a reason for intervention unless a bite, scratch, or saliva exposure into a wound or mucous membrane can be ruled out. In an adult, a bat landing on clothing would be considered reason for an

intervention only if a bite, scratch, or saliva exposure into a wound or mucous membrane could not be ruled out. In a child, any direct contact with a bat should be considered a reason for an intervention, including contact through clothes, as a history to rule out a bite, scratch, or mucous membrane exposure may not be reliable. When a bat is found in a room with a child or an adult who is unable to give a reliable history, assessment of direct contact can be difficult. Factors indicating that direct contact may have occurred include the individual waking up crying or upset while the bat was in the room, or observation of an obvious bite or scratch mark." (Canadian Immunization Guide, 2015). If possible, the bat involved in the exposure should be captured and tested to determine whether it is infected and if RPEP is required.

### 6.1.3 Non-Risk Exposures

- Petting a rabid animal or handling its blood, urine or feces does not constitute an exposure.
- Being sprayed by a skunk is not considered to be an exposure.
- Rabies virus is inactivated by desiccation and ultraviolet irradiation. In general, if the material containing the virus is completely dry (e.g. a mummified bat), the material can be considered noninfectious.

## 6.2 Type of Animal

### DEFINITIONS

**Domestic animal (pet)** – a domesticated animal that has a known owner and lives in a household setting, also referred to as a pet.

**Semi-domestic animal (stray)** – a domesticated animal that has no known owner, also referred to as a stray animal.

**Farm animal** – a domesticated animal that has been raised and lives on a farm; excludes pets, i.e. cats that may live at the farm.

**Feral animal** – an animal that normally would be considered domesticated but has returned to living as a wild animal.

**Wild animal** – an animal that has not been domesticated and lives in the natural environment.

**Wild-farmed animal** – an animal that has not been domesticated and usually lives in the natural environment but is bred and raised in captivity.

PH staff must determine whether the animal is a domestic, semi-domestic, feral, farm, wild, or wild-farmed animal. The species of animal, the risk of rabies infection in the species, and the geographical location where the exposure occurred, all need to be considered. Common wildlife rabies vectors in Canada and the USA are foxes, coyotes, wolves, skunks, bats and raccoons.

Rats, rabbits, squirrels and mice are rarely infected. Domesticated animals such as dogs, cats, and livestock may be at risk of contracting rabies if exposed to infected animals and then pose a further risk to their owners. The likelihood of rabies in most wildlife and in domestic animals in NS is considered low, with the highest risk resulting from bat exposures.

### 6.2.1 Domestic Pets (cats, dogs, ferrets)

- Responsible vaccination of pets significantly lowers the risk of rabies in the animal but



does not eliminate risk. Therefore, the vaccination history should not solely influence the decision for prophylaxis. Since an up-to-date rabies immunization schedule for pets varies with the product, vaccine details should be obtained. Some products are administered yearly, and others are every 3 years. Missed doses may lead to decreased immunity.

- Studies regarding rabies pathogenesis and viral shedding patterns, and evidence of the efficacy of the IMRAB3 vaccine in ferrets has led to the recommendation of grouping domestic (pet) ferrets with domestic cats and dogs rather than with wild animals.
- If rabies is suspected, the animal should be euthanized and tested and RPEP should be initiated.

### **6.2.2 Farm Animals (horses, cattle, swine, etc.)**

- PH staff may consult with NSDA regarding behavior in farm animals.
- In some cases, exposures involving farm animals are first reported to the NSDA who will then inform local PH.

### **6.2.3 Semi-Domestic, Feral Animals, Wild, and Wild- Farmed Animals**

- Bites and non-bite exposures from all stray, feral, and wild animals (foxes, raccoons, skunks, bats, etc.) are of concern.
- Bites from rabbits or small rodents (such as squirrels, rats, gerbils, mice, and chipmunks) seldom, if ever, call for rabies prophylaxis (only if the behavior is highly unusual).
- Exotic animals (lions, monkeys, etc.) in captivity should be treated as 'wild animals' in terms of risk but may be confined and observed depending on the animal and the circumstances. Risk assessment would include an examination by a veterinarian.

### **6.2.4 Animal Exposures outside Nova Scotia**

Risk assessment should be conducted as usual for a suspect rabies exposure including consideration of rabies risk in the animal and geographic region of the exposure.

## **6.3 Behaviour of Animal**

The behaviour of the animal in relation to the human behaviour (provoked attack or unprovoked attack) at the time of the bite must be considered.

- An unprovoked attack is one where the person did not surprise, antagonize or threaten the animal or enter its territory. An unprovoked attack may indicate that the animal is rabid. Rabid cats and dogs may, however, become uncharacteristically quiet.
- A provoked attack is one where the human did something to incite the animal (even if the action was unintentional) and the attack would be the animal's normal response to such a human action. Examples of such human actions could include:
  - Attempting to corner or trap an animal
  - Entering an area that the animal considers its territory (dog in a yard) or approaching the animal's litter
  - Coming too close to an injured animal

- Trying to break up a fight between two animals
  - Picking up an animal and attempting to take it elsewhere
  - Petting an unfamiliar animal
  - Interfering with an animal's food
  - Interfering/wrestling with an animal's owner
- The symptoms in different animal species can vary considerably, but almost always there is a change of temperament and evidence of paralysis, with death ensuing within a few days of the onset of symptoms. The following fact sheet describes the clinical signs of rabies in animals: [inspection.gc.ca/animals/terrestrialanimals/diseases/reportable/rabies/fact-sheet/eng/1356155202013/1356155379445](https://inspection.gc.ca/animals/terrestrialanimals/diseases/reportable/rabies/fact-sheet/eng/1356155202013/1356155379445)
  - The overall period from onset of clinical symptoms to death rarely exceeds ten days in dogs, cats, and ferrets. In the earlier stages, a common factor is that the animal undergoes a change of temperament so that a normal friendly animal may become snappy or seek to avoid the owner's company. Timid, shy animals may become less restrained and unnaturally approachable.
  - Signs of rabies cannot be reliably interpreted in wild animals.
  - PH staff should consider recommending RPEP while awaiting the results of rabies testing or the outcome of an animal in confinement if the behaviour of the animal is highly suspicious of rabies. The MOH should be consulted.

## **6.4 Availability of Animal (for observation and/or laboratory testing)**

### **6.4.1 Animal is available for Observation**

- PH staff should ensure that every effort has been made to locate pet dogs, cats, and ferrets before recommending RPEP. Local animal control officers (where available) may be able to assist PH staff in locating and assessing the animal.
- If clinically normal and the suspicion of rabies is low, the domestic or semi-domestic animal should be held in a secure facility and observed, where possible, for ten days. If the animal remains clinically normal throughout this ten-day period, then rabies can be ruled out.
- Circumstances of the exposure as well as the location and severity of the bite may, however, justify early initiation of RPEP.

### **6.4.2 Animal available for Laboratory Testing of the Brain**

- Dogs, cats, ferrets and other domestic animals and stray pets that exhibit any signs of illness consistent with rabies during an observation period should be euthanized and submitted for rabies testing.
- PH staff should ensure that any wild, feral, and unwell stray animal that has bitten a person is captured if possible, euthanized and tested for rabies infection (in consultation with the MOH).
- PH staff make arrangements for the transport and testing of the animal, referring to appendices B, C and D: Departmental Roles in the Testing of Animals involved in Category

II and III Human Exposures to Potentially Rabid Animals, Nova Scotia Rabies Response Program Roles and Responsibilities (with specific directives), and contact information for DLF, NSDA, and PH, NSHA. The MOH involved in the risk assessment should be listed as the submitting individual. CFIA's Rabies Sample Submission Form may be found here: [inspection.gc.ca/DAM/DAM-aboutcfia-sujetacia/STAGING/text-texte/c2908V1\\_re\\_1396296694437\\_eng.pdf](https://inspection.gc.ca/DAM/DAM-aboutcfia-sujetacia/STAGING/text-texte/c2908V1_re_1396296694437_eng.pdf)

- PH staff should contact the local office of DLF to request that a wild animal be captured if possible. If the suspect animal has escaped after the initial contact, it may not be possible for DLF to locate it or positively identify that it was the same animal that had been involved in the human contact incident.
- DLF may also pick up a dead animal to which a person has been exposed after normal working hours (evenings, weekends, and holidays) and transport or store it.
- DLF will notify PH whether capture of the wild animal has been possible.
- A bat should be safely collected, and the entire bat can be submitted for rabies diagnosis.
- If a person brings a dead animal, to which they or another person has been exposed (most likely a bat) directly to a PH office, PH staff should make arrangements with DLF for the collection, transport for processing and testing of the animal.
- RPEP may be started pending animal examination results if the exposure is felt to be high-risk. Factors to consider include the severity and location of bites (head and neck of greatest concern), the health and behavior of the biting animal, availability of test results and the reliability of victim to recognize or report the nature of the exposure. In high-risk situations, PH may recommend that prophylaxis be started. The need for completion of RPEP will be determined by the animal test results.
- Negative test results obtained by appropriate and systematic examination of specimens can be interpreted reliably so that no RPEP is required or RPEP that was initiated can be stopped.

#### **6.4.3 Animal not available for Observation or Laboratory Testing**

PH staff can obtain advice on the risk of rabies exposure when the animal is not available for testing or observation. Such situations should be discussed with the local MOH.

If the animal is not available for observation and/or testing, PH staff should generally consider and recommend RPEP for exposure from:

- Wild animals,
- Stray and feral dogs, cats and ferrets,
- Pet dogs and cats in an unprovoked attack (especially if no previous history of unprovoked attacks and incomplete or inadequate immunization against rabies),
- Bat exposures when both of the following conditions apply:
  - There has been direct contact with a bat and
  - A bite, scratch, or saliva exposure into a wound or mucous membrane cannot be ruled out.
  - See [Section 6.1.2](#) for further details

**Note: Contact with small rodents rarely warrants prophylaxis.**

## 7.0 RISK REDUCTION AND MANAGEMENT OF ANIMALS AND HUMANS INVOLVED IN INCIDENTS

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### 7.1 Risk Reduction

To reduce the risk of rabies in general, a number of steps can be considered:

- Maintain a surveillance system for animals and human illness in order to detect rabies and promptly implement prevention and control measures as required.
- Educate the public on ways to reduce exposures to wild animals including not feeding wildlife and ensuring homes are sealed from bats.
- Encourage vaccination of domestic pets, livestock, and horses.

Bite prevention: Be cautious when approaching unknown animals, even pets. Be sure to ask permission from an animal's owner before petting the animal. Never disturb an animal that is sleeping, eating, or caring for its young.

### 7.2 Management of Animals

The management of animals that have bitten or otherwise exposed a human depends on whether the animal is a pet or other domestic animal or a wild or stray animal.

PH staff should ensure that all possible effort is made to locate animals that have exposed humans to the risk of rabies (bite or non-bite exposures) and place them in confinement.

Locating the animal for observation or testing as appropriate, can reduce unnecessary RPEP.

Reports of animal(s) suspected of being rabid, regardless of whether it has been involved in a biting incident, should be communicated to the MOH and the appropriate lead department for further action (i.e. capture/euthanasia/testing).

PH staff must consult with the MOH about the need to euthanize any domestic animal for rabies testing.

See [Appendices E, F, and G](#) for algorithms depicting public health activities related to domestic, semi-domestic, wild, and farm exposures.

#### 7.2.1 Domestic, Semi-Domestic, and Farm Animals

##### Domestic:

- Healthy, non-stray dogs/cats/ferrets should be located and placed under a ten day observation period (the day of the bite would be day one). This may eliminate the need for RPEP and unnecessary laboratory testing of the animal brain for rabies. PH staff will assess whether the exposure was provoked, whether the animal is clinically normal (which may require consultation with a local veterinarian), determine its rabies immunization status and will ensure that the animal will be assessed, observed and confined (as required). If the animal's behaviour during the observation period remains normal, the client does not require post-exposure prophylaxis beyond proper wound care. If an attack by a

domestic non-stray dog/cat/ferret was provoked and there are no clinical signs of rabies in the animal, the animal can be confined at the home of the exposed person if he/she owns the animal. It should be confined in a building or secured area so that it cannot run away. Local animal control officers (if available) can provide assistance to ensure that the necessary arrangements are made. PH staff must discuss the euthanasia and testing of an animal before the end of the observation period with the MOH.

- If the exposed person does not know the owner of the animal or requests assistance, PH staff will contact the owner of the animal and advise the owner to observe the animal for ten days.
- If the animal becomes unwell or develops behavioural changes suggestive of rabies (e.g. unprovoked aggression) during the observation period, the owner must be instructed to have the animal assessed by a veterinarian and immediately inform PH. PH must then inform and consult with the MOH. The animal should be isolated. Local animal control staff should be contacted if assistance is required. If rabies is suspected, PH will arrange for animal testing and consider need for RPEP.
- If the owner refuses to confine an animal, the MOH can issue an order for the animal to be secured alive and uninjured and confined in a secure place at the owner's expense for up to ten days. If the owner refuses to confine the animal at home, then the animal must be detained at a kennel where the pet (dog/cat/ferret) can be observed at the owner's expense. At the first sign of illness during confinement, PH must be immediately notified by the person(s) responsible for confining and observing the animal.
- In cases where a domestic dog/cat/ferret does not appear to be clinically normal, or is dangerous, or has inflicted a facial bite, the MOH can decide whether immediate euthanasia and testing or observation is necessary.
- If the animal is euthanized for any other reason, the decision whether to provide RPEP and/or test the animal must be made, in consultation with the MOH.

### **Semi-Domestic:**

- If necessary, PH staff should request whether a local animal control officer could locate, capture, and confine a stray dog, cat, or ferret. However, if the suspect animal has escaped after the initial contact, it may not be possible to locate it or positively identify that it was the same animal that had been involved in the human contact incident. A veterinarian should assess the animal. If it is clinically normal and the suspicion of rabies is low, it should be held and observed for ten days in a secure facility. If this is not feasible or if there is any suspicion of rabies illness, the animal should be euthanized and the head submitted for rabies testing. PH should consider the need for interim RPEP while awaiting results. PH staff must inform and consult with the MOH if the animal becomes unwell. If indicated, PH will arrange for testing and consider need for interim RPEP.
- In most cases, semi-domestic pets (cats, dogs, ferrets) should be confined for observation instead of being immediately euthanized if they can be positively identified as the animal involved in the exposure and it is possible and appropriate to do so. PH staff should make this decision in consultation with the MOH. For example, a stray dog, cat, or ferret that bites/exposes a person and is aggressive or displaying abnormal clinical signs may be euthanized immediately and have its head sent for testing. Otherwise, euthanize only if

observation for ten days in a secure facility is not feasible.

- If the animal is euthanized for any other reason, the decision on whether to provide RPEP and/or test the animal will be required, in consultation with the MOH.

**Farm:**

- Euthanization and testing of farm animals such as horses, cattle and swine should be done if rabies is part of the differential diagnosis.

Note: In rare circumstances, the test results of an animal may be falsely negative, but the animal is rabid in the absence of signs of rabies as the virus may have not yet reached the brain.

**7.2.2 Wild and Feral Animals**

- PH staff should contact DLF to request assistance for capturing wild suspect animals, if they can be positively identified as the animal involved in the exposure. DLF can assist with determining if capture and euthanasia of wildlife are necessary or possible when there has been human contact and the transmission of rabies is a possibility.
- DLF can attempt to locate/trap/euthanize the suspect wild or feral animal (if not already done) and will arrange for processing and shipping. With respect to the capture of wild animals, DLF will only provide assistance when resources are available and if the suspect animal is identifiable (trapped in a closed area).
- If the wild animal is captured (other than a bat), it should be euthanized and the head sent by DLF staff to the CFIA, Ottawa for testing.
- A bat should be safely collected, if possible, and the entire bat submitted for testing.
- Euthanization and testing of exotic animals should be done if rabies is part of the veterinarian's differential diagnosis.

**7.2.3 Laboratory Testing of Animals**

Testing of animal and human specimens for rabies in NS is conducted at the CFIA Ottawa Laboratory–Fallowfield (OLF) in Ottawa, ON. The CFIA has an electronic system for test requisition and information management ([inspection.gc.ca/DAM/DAM-aboutcfia-sujetacia/STAGING/text-texte/c2908V1\\_re\\_1396296694437\\_eng.pdf](https://inspection.gc.ca/DAM/DAM-aboutcfia-sujetacia/STAGING/text-texte/c2908V1_re_1396296694437_eng.pdf)). There is no charge for testing, provided the suspect animal potentially exposed a person or a domestic animal. The specimen must be shipped appropriately and classified as “dangerous goods” if the specimen is considered high-risk according to the Transport of Dangerous Goods Regulations.

Rabies virus reaches the salivary glands and is excreted in saliva only after replication in the central nervous system. Absence of the rabies virus antigen in the brain of the animal essentially precludes the presence of virus in saliva, the risk for rabies transmission, and the need for RPEP. Clinical signs leading to a suspicion of rabies occur only after substantial virus replication. At that time, most tests for rabies reveal considerable amounts of viral antigen in all areas of the brain, though in livestock, viral distribution can be less uniform. It is for this reason that the laboratory tests several regions of the brain, and requests at a minimum, submission of portions of brain tissue collected bilaterally from the cerebellum, hippocampus and brain stem (medulla) of large animals. For small animals (<500 g) the entire

animal should be submitted, and for mid-sized animals, the entire head should be submitted. To increase diagnostic sensitivity, a portion of cervical spinal cord can be submitted as well; this is particularly important if the head has been damaged or the animal is large (>100 kg). If tissue needs to be retained for other purposes, please contact the laboratory for additional instructions before shipping the sample.

The fluorescent antibody test (FAT) for detection of rabies virus antigen in brain tissue is used as the main diagnostic test. The test has a sensitivity approaching 100% when conducted by experienced staff using high quality reagents. Results are usually available within 24-hours of receipt of the specimen at CFIA-OLF. To ensure timely results, samples submitted should be refrigerated, and not frozen. Samples received frozen must be completely thawed before testing can begin, which can delay results by a day or more. If the animal has already been euthanized, burned or buried, there may still be enough tissue in a condition suitable for testing. CFIA-OLF will always attempt to test such samples, as a positive result is definitive, even with poor quality tissue or submission of non-standard tissue for examination (e.g. cerebrum only). PH staff should discuss such situations with the local MOH.

Other tests are available, including an immunohistochemistry (IHC) test for formalin-fixed tissue. However, submission of fixed samples should be discouraged as the sensitivity of IHC test is much lower than that of the FAT, and the service standard is 10 business days. For human suspect cases, FAT on nuchal skin biopsy samples and RT-PCR tests on saliva and skin are available, with a service standard of 24-48h from time of receipt.

All results are reported by email to the sample submitter and up to three other parties, which the submitter can identify on the test requisition form. When there has been human exposure, the sample submitter is immediately notified by telephone if the sample tests positive or is found unfit for testing. Regardless of exposure, if the FAT is positive, CFIA will perform testing to determine the variant of the infecting virus, provided sufficient tissue is available

For departmental roles involving animal testing refer to [Appendix B](#) and [C](#): “Departmental Roles in the Testing of Animals involved in Category II and III Human Exposures to Potentially Rabid Animals” and Nova Scotia Rabies Response Program Roles and Responsibilities (with specific directives). Contact Information for DLF, NSDA, and PH can be found in [Appendix D](#).

#### **7.2.4 Management of Exposed Animals**

- In some cases, a pet or domestic animal may have been attacked by or fought with a suspected or confirmed rabid animal. Consequently, the animal may remain at risk for developing rabies in the future. In such cases, it is the responsibility of the veterinarian or DLF/NSDA (if animal is captive wildlife/farm) to manage the exposed animal. If the exposed animal had contact with a human and there are questions regarding risk to humans, there may be a need for PH involvement. In such cases, the MOH or delegate may consult the Canadian Wildlife Health Cooperative, Atlantic Veterinary College (CWHC-AVC) to obtain veterinary medical expert advice, as appropriate (personal correspondence from Dr. Strang, April 7, 2015).
- Further information regarding the management of potential domestic animal exposures to rabies can be found in the document, “Recommendations of the Canadian Council of Chief Veterinary Officers Subcommittee for the Management of Potential Domestic Animal Exposures to Rabies”.



## 7.3 Management of Exposed People

Rabies in humans can be prevented by providing exposed clients with prompt local treatment of wounds combined with appropriate passive and active immunization. Rabies Post Exposure Prophylaxis (RPEP) must be considered in every incident in which potential exposure to the rabies virus has occurred. Rabies is reportable in NS under the Health Protection Act and an MOH or delegate is available to assist physicians and other health care professionals with the risk assessment for rabies when treating bites and wounds related to animal exposures (including providing advice on the need for RPEP and ensuring that required RPEP biologicals are provided and administered).

### 7.3.1 Treatment of Wounds

- Immediate and thorough cleaning of all bite wounds and scratches is one of the most important aspects of rabies prevention. Thorough cleaning and flushing of the wound area with soap and water for approximately 15 minutes followed by the application of an iodine-containing, or similarly viricidal topical preparation to the area is recommended.
- At the time medical attention is sought, if the wound is caused by a known rabid or highly suspect rabid animal, suturing of the wound should not be done, and RIG should be infiltrated in the area around and into the wound. If suturing is unavoidable, it should be done after local infiltration of RIG. If at the time medical attention is sought, the animal is being held for observation to rule out rabies, suturing can proceed.
- Tetanus prophylaxis should be given as indicated. There should be an assessment by a physician regarding measures to control bacterial infection (antibiotic therapy).

### 7.3.2 Immunizing Agents

Due to fragility of products and supply, it is of utmost importance for optimal storage and use of rabies biological products.

There are two types of immunizing products:

- Rabies vaccine, HDCV (Human Diploid Cell Vaccine), contains inactivated virus and induces an active immune response beginning in seven to ten days and persisting for at least one year. Purified Chick Embryo Cell Vaccine (PCECV) is also available.
- Rabies Immune Globulin (RIG), provides rapid protection that persists for only a short period of time (half-life is about 21 days).

### 7.3.3 Post-Exposure Immunization

When post-exposure rabies prophylaxis is recommended:

- The combination of RIG and rabies vaccine (RPEP) is recommended regardless of the interval between exposure and initiation of treatment. However, it is best if started as soon as possible after the exposure.
- PH staff must discuss with the client their willingness and commitment to accept and complete RPEP.
- If PH staff administers RPEP, informed consent for immunization must always be obtained from the client.



- PH staff must determine the immunization status of the client.
- RPEP for clients who have previously received rabies vaccine depends on what preparation of rabies vaccine was previously received and whether the full course was completed (please refer to the [Canadian Immunization Guide](#)).
- PH staff should plan the immunization schedule with the client and confirm the identity and location of the health care provider who will give RPEP.
- Pregnancy is not a contraindication to post-exposure prophylaxis
- If the client needs to complete the post-exposure series outside of the PH area, PH staff should ensure that arrangements are made to complete the series.
- In situations where the animal involved in the exposure is tested and post-exposure prophylaxis is started before the test results are available, in consultation with PH, the rabies vaccine may be discontinued if the animal tests negative for rabies.
- Healthy people immunized with an appropriate schedule will develop rabies antibody and will be protected. Routine post-immunization assessment of antibody levels is not recommended. Post-vaccination serology should be considered for: persons with ongoing high risk of exposure to rabies, persons in whom there has been a substantial deviation from the recommended post-exposure schedule, immunocompromised persons and those taking chloroquine.
- RPEP started in another country requires individual assessment and consultation with the MOH and/or primary care physician.
- Immunocompetent persons should be given four doses of the rabies vaccine; immunocompromised persons (including those taking corticosteroids or other immunosuppressive agents, and those who have immunosuppressive illnesses) and those taking chloroquine and other anti-malarials should be given five doses of the rabies vaccine.

*For information related to serologic testing, administering RIG and Rabies Vaccine (HDCV) and situations such as RPEP initiated in other countries, please consult the [Canadian Immunization Guide](#).*

## 8.0 OBTAINING RABIES BIOLOGICALS

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DHW ensures there is a secure procurement of Rabies Immune Globulin (RIG) and Rabies Vaccines as part of the publicly funded immunization program for post-exposure prophylaxis. For pre-exposure prophylaxis as part of high-risk occupational exposure or travel, Rabies vaccine and RIG may be accessed through the private market.

A limited supply of RIG and rabies vaccine is kept in each PH zone and is managed by the NSHA PH.

The “Protocol for Immune Globulin Release and Documentation” can be found in the [Immunization Manual](#)

### 8.1 Authorization of Biologicals

- Only the MOH or delegate can authorize release of Rabies Immune Globulin (RIG) and rabies vaccine for a client.
- The Chief Medical Officer of Health and Deputy Chief Medical Officer of Health are available for consultation if required by the MOH.
- RIG and Rabies vaccine should be stocked within the PH zone where it can be accessed by appropriate staff when authorized for use by the MOH.

### 8.2 Requirements for Additional Biologicals

If more RIG and vaccine is needed than what is available in the stock supply, then:

#### **During regular business hours:**

- PH staff should contact the Provincial Biological Depot Coordinator to arrange the shipment of the required biologicals.

#### **Outside of regular business hours:**

- Contact the MOH on-call to authorize the release and delivery of additional vaccine or RIG from the Provincial Biological Depot.
- Please refer to Chapter Five of the [Immunization Manual](#) to determine how to contact the Provincial Biological Coordinator or the MOH on-call.

## 9.0 COMMUNICATION STRATEGY

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### 9.1 Objectives:

- To raise awareness of and prevent rabies within NS.
- Provide Nova Scotians with consistent, up-to-date and reliable information about rabies.
- Ensure health care providers have access to information regarding rabies including legislation regarding disease reporting.
- Emphasize the importance of personal responsibility in preventing the spread of rabies.

### 9.2 Target Audiences:

- General public
- Media
- Health care professionals
- Tourists/outdoor recreationalists
- Outdoor, lab and other workers who may come into contact with rabies infected animals or tissues.

PH provides information on rabies prevention initiatives that are occurring within their area.

DHW ensures resource information is current regarding the risk of rabies in NS as well as recommendations to prevent unwanted exposures from potential animals with rabies to the public, media and health care workers. The tools used to provide information include:

- Poster “Rabies: How to assess animal bites or concerns about rabies exposure.
- Website <https://novascotia.ca/dhw/CDPC/rabies.asp>
- In addition, DHW may provide rabies related information as necessary via:
  - Letters to Nova Scotia’s health care providers.
  - Updates to Doctors Nova Scotia.
  - Media and press releases.

Community and health care settings (hospitals, clinics, health care providers offices , veterinary clinics, Lands and Forestry offices, regional education centres , community and recreation centres, municipal offices, visitor information centres, campgrounds, golf courses, parks, etc.) can access information at the following link: [novascotia.ca/dhw/CDPC/rabies.asp](https://novascotia.ca/dhw/CDPC/rabies.asp).

**The key messages provided include:**

- People in high-risk groups including, veterinarians, lab workers, animal control officers, wild- life management workers and researchers, persons hunting and trapping in high-risk areas or cave explorers and people traveling to areas where rabies is endemic should be immunized.
- Register, license (as appropriate) and vaccinate all domestic animals such as dogs, cats, livestock and horses.
- Animal (pets and farm animals) owners should be aware of the signs and symptoms of rabies.
- The public should be aware of the dangers of picking up sick or hurt animals or domesticating wild animals.
- Wild animals should not be relocated to other areas of the province or to or from other provinces.
- Do not feed wild animals or leave left over food around yards, parks etc. as it may attract wild animals.
- Be cautious when approaching unknown animals, even pets. Be sure to ask permission from an animal's owner before petting the animal. Never disturb an animal that is caring for its young, sleeping or eating.
- Seal small holes and entryways where bats could potentially enter homes, cottages, sheds, and other areas where they might have contact with people, pets or farm animals.

## 10.0 APPENDICES

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### APPENDIX A: Public Health Management and Response in Potential Rabies Investigations involving Human Exposure

Follow up cases as soon as possible and take the following steps:

1. Contact the health care provider to obtain clinical information on the case if reported via a health care provider. The health care provider can advise observation of an animal (when appropriate, such as a dog or cat) for 10 days and only contact Public Health (PH) if there are concerns about the behaviour or health of the animal involved in the exposure or if the animal becomes ill during the observation period. In this situation, the PH investigator may not need to interview the client unless there are concerns with the animal under observation and the potential need for rabies post-exposure prophylaxis.
2. Interview the client and review clinical information, mode of transmission, exploring the details of the exposure (bite, lick, scratch, contact, etc.):
  - The nature of the exposure (including bite or non-bite, severity and location of the wound).
  - The type of animal (wild/feral animal versus domestic animal), including the risk of rabies in the animal species involved.
  - Behaviour of the animal (provoked or unprovoked attack) at the time of the bite.
  - The availability of the animal for observation and/or laboratory testing of the animal brain.
  - Rabies immunization status of the client and the animal, if known.
  - Age of the exposed person.
3. Educate the client and/or family about rabies and prevention measures, providing access to fact sheets and link to the website as indicated.
4. Determine the need for observation or testing of the animal, if available, and the authorization for rabies post-exposure prophylaxis (Rabies immunoglobulin (RIG) and vaccine) when necessary.
5. Owned dog, cat, ferret: Ensure the health and behaviour of a suspect animal is assessed, the animal is confined and observed for 10 days after the exposure (dogs, cats or ferrets only) or is euthanized for testing as appropriate. The assessment may be done by phone with the animal's owner or with the assistance of local municipal animal control services (if available). Inform the owner of the animal that they must notify Public Health and have the animal examined by a veterinarian immediately if it becomes ill or its behaviour becomes abnormal. If the animal will be tested, ensure that the animal is taken to a veterinarian, is euthanized and kept refrigerated. See **Appendices B, C, and D** and **Sections 6 and 7** of the response plan.

Stray dog, cat, ferret: PH staff should request whether a local animal control officer could locate and confine a stray dog, cat, or ferret. A veterinarian should assess the animal. If it is clinically normal and the suspicion of rabies is low, it should be held and observed for ten days in a secure facility. If this is not feasible or if there is any suspicion of rabies illness, the animal should be euthanized and the head submitted for rabies testing. PH should consider the need

for interim RPEP while awaiting results.

Wild/Feral Animals: All wild animals potentially infected with rabies (such as coyotes, raccoons, skunks, bats, and fox) that have exposed a person must be tested, if available. DLF must be consulted about apprehending and euthanizing any suspect wild animal. DLF will assist with determining if location, capture and euthanasia of suspect wild animal is feasible or possible when there has been human contact and the transmission of rabies is a possibility. For further information regarding the testing of animals, please refer to Appendices B, C, and D and 6 and 7 of the response plan.

6. Arrange for administration of RIG and rabies vaccine if indicated, through Public Health or a family physician, nurse practitioner, duty clinic or Emergency Department providing advice with respect to dosing and administration.

7. In high-risk situations (bites to the head and neck or animal behaviour that is suggestive of rabies infection, especially in an unimmunized or wild/feral animal), post-exposure prophylaxis may be started immediately pending the results from animal testing. If testing confirms that the animal does not have rabies, the vaccine series does not require completion.

8. Local Animal Control staff and/or Bylaw officers may be available to search for and identify a dog, cat or ferret that has been involved in a significant exposure (bite or saliva or neurological tissue exposure of broken skin or mucosal surface) of humans. Animal Control staff may obtain information about the rabies immunization status, health and behaviour of the animal, and may assist with ensuring that the animal is kept under the owner's control and observed for the required observation period, checking to ensure that the animal remains healthy at the conclusion of the observation period.

- Animal Control staff may also make arrangements for apprehending a pet, transporting it and confining it to an animal shelter when requested by Public Health. This may be required if there is concern about people being attacked by the animal if left in the community or there is any concern that the owner will not cooperate with the confinement and observation of the animal.
- Animal Control staff will inform the PH investigator about their initial assessment of the animal as well as the status of the animal at the end of the observation period. If the animal becomes unwell and there is any suspicion of rabies, Animal Control staff will assist Public Health to ensure that the animal is euthanized and tested for rabies infection.
- Animal Control staff may also assist PH to search for and apprehend any stray animals that have been involved in the significant exposure of humans. The stray animal must be either placed in an appropriate shelter for the observation period or euthanized and tested for rabies as required by PH.

In the absence of municipal animal control services, PH may work with local community animal groups if available for assistance (e.g. confinement).

9. PH may be involved in the completion of rabies post-exposure prophylaxis that was initiated outside of the province. PH will arrange for the completion of the vaccine series by a physician, duty clinic, nurse practitioner, or PH. See [Canadian Immunization Guide](#) for post-exposure prophylaxis initiated in another country.

10. Document the information in the public health electronic information system (Panorama).

## APPENDIX B:

# Departmental Roles in the Testing of Animals involved in Category II and III Human Exposures to Potentially Rabid Animals

### Departmental Roles in the Testing of Animals involved in Category II and III Human Exposures

Reviewed and approved in principle by the Deputy Ministers of Agriculture, Natural Resources, and Health and Wellness on February 4, 2015. As of 2018, Department of Natural Resources now Department of Lands and Forestry.

Scenario	Domestic + Alive + Available <sup>8</sup>		Domestic + Alive + Available <sup>8</sup> + Aggressive Attack/Personality		Domestic + Dead	Domestic + Unavailable	Semi-domestic (Stray) + Available <sup>8</sup>		Semi-domestic (Stray) + Unavailable	Unknown + Unavailable
	Risk Assessment	Risk Assessment + 10 Day Observation	Risk Assessment	Risk Assessment + 10 Day Observation	Risk Assessment	Risk Assessment	Risk Assessment	Risk Assessment + 10 Day Observation	Risk Assessment	Risk Assessment
Animal Status	Unwell	Well	Unwell	Well	Dead	Unavailable	Unwell	Well	Unavailable	Unavailable
Pick up animal	Owner	N/A	Owner or DLF	Owner not willing to house animal- DLF pick-up	Owner or DLF	N/A	DLF	DLF	N/A	N/A
Observation Location	N/A	Home	N/A	Private Home or Shelter if Available <sup>9</sup>	N/A	N/A	N/A	Private Home or Shelter if Available <sup>9</sup>	N/A	N/A
Euthanasia <sup>7</sup>	Private Vet	N/A	Private Vet	N/A for Rabies investigation	N/A	N/A	Private Vet	Private Vet	N/A	N/A
Transport for Processing <sup>2</sup>	DLF	N/A	DLF	N/A for Rabies investigation	DLF	N/A	DLF	N/A	N/A	N/A
Processing & Packaging	NSDA	N/A	NSDA	N/A	NSDA	N/A	NSDA	N/A	N/A	N/A
Outcome <sup>11</sup>	Specimen Tested	No Action Required	Specimen Tested	No Action Required	Specimen Tested	RPEP (Rabies Post Exposure Prophylaxis)	Specimen Tested	No Action Required	RPEP	RPEP

Scenario	Feral <sup>3</sup> + Available <sup>8</sup>	Feral <sup>3</sup> + Unavailable	Farm + Alive		Farm + Dead	Wild + Alive + Available	Wild + Alive + Unavailable	Wild + Dead + Available	Wild + Dead + Unavailable	Wild + Farmed + Available
	Risk Assessment	Risk Assessment	Risk Assessment	Risk Assessment + Observation <sup>4</sup>	Risk Assessment	Risk Assessment	Risk Assessment	Risk Assessment	Risk Assessment	Risk Assessment
Animal Status	Available	Unavailable	Unwell	Well	Dead	Alive	Unavailable	Dead	Unavailable	Available
Pick up animal	DLF	N/A	Owner <sup>2</sup>	N/A	DLF	DLF	N/A	DLF	N/A	Owner <sup>2</sup>
Observation Location	N/A	N/A	Farm/On-Site	Farm/On-Site	N/A	N/A	N/A	N/A	N/A	Farm/On-Site
Euthanasia <sup>7</sup>	Private Vet	N/A	Private Vet <sup>3</sup>	N/A	N/A	DLF	N/A	N/A	N/A	Private Vet
Transport for Processing <sup>2</sup>	DLF	N/A	DLF <sup>10</sup>	N/A	DLF <sup>10</sup>	DLF	N/A	DLF	N/A	DLF <sup>10</sup>
Processing & Packaging	NSDA	N/A	NSDA	N/A	NSDA	DLF	N/A	DLF	N/A	NSDA <sup>6</sup>
Outcome <sup>11</sup>	Specimen Tested	RPEP	Specimen Tested	No Action Required	Specimen Testing	Specimen Tested	RPEP	Specimen Tested	RPEP	Specimen Testing

#### Notes:

- All DLF & NSDA entries represent an increased role that will potentially require new resources and may be beyond the department's current mandate.
- Transportation of the animal where required is at the cost of the owner, in most circumstances the veterinarian will travel to the animal as necessary.
- If euthanasia is required, PH will work with the client & local veterinary service providers to arrange if owner is unable or unwilling to arrange.
- Length of observation period may differ from the 10 day observation period used for domestic animals.
- "Feral" differs from "stray" as the term "stray" implies no known owner, while "feral" refers to a domesticated animal that has returned to living as a wild animal.
- NSDA wild animal involvement is limited to wild-farmed i.e. mink.
- Euthanasia is performed by the veterinarian at the cost of the owner.
- Available means caged and ready for transport.
- PH directs DLF where to take the animal (e.g. shelter)
- DLF picking up and transporting a head only.
- Depending on risk assessment, the MOH may decide to initiate RPEP prior to obtaining test results.

NOTE: DLF will NOT remove head of domestic/stray/feral/farm animal. PH will coordinate with animal owner (eg. private farmer) and Vet re the removal of the head of a large carcass that cannot be transported.

Key	
	NSDA <sup>1</sup>
	DLF <sup>1</sup>
	Public Health (NSHA)

## APPENDIX C: Roles and Responsibilities with Specific Actions

	Intake	Pick-up / Transport	Process Specimen and Shipping	Report to Medical Officer Health (MOH) Public Health (PH)	Pay
<b>Nova Scotia Health Authority (NSHA)</b>	<p>Receive notification</p> <p>Initiate case investigation.</p> <p>MOH to contact DLF to arrange for transport.</p>	<p>Provide address and contact information to DLF staff for pick-up.</p> <p>Arrange euthanasia services if required</p> <p>Contact Animal Health Lab to notify of incoming specimen or to arrange for staff to be present if weekend or holiday.</p> <p>Telephone for Animal Health Lab: 902-893-6540 (after hours a message will lead the caller to phone a cell (902-956-0028).</p>	N/A	<p>Follow up with DLF or NSDA for specimen results as necessary.</p> <p>If receive results forward to MOH.</p> <p>Determine course of action with client based on test results.</p>	N/A
<b>Department Health Wellness (DHW)</b>	<p>If receive notification of human exposure forward person to NSHA, PH.</p>	N/A	N/A	Forward results to the submitting MOH.	Pay for cost associated with pick-up, euthanasia (as necessary), transport, processing and shipping in accordance with tri-departmental agreement for the testing of specimens requested by an MOH.
<b>Department Lands and Forestry (DLF)</b>	<p>If receive notification of human exposure forward person to NSHA, PH.</p>	<p>Ensure after-hours emergency line is operational.</p> <p>Field staff to pick up live animal and transport for euthanasia or deceased animal and transport for processing.</p> <p>All animals except wild to be transported to the NSDA Pathology Lab.</p> <p>DLF to process and ship wild animal specimens.</p>	<p>Process wild animal specimens for shipping according to Transportation of Dangerous Goods guidelines.</p> <p>Ship package to Canadian Food Inspection Agency (CFIA) laboratory, Ottawa for testing.</p>	Forward results to the submitting MOH.	Pay for cost associated with pick-up, euthanasia (as necessary), transport, processing and shipping for the testing of wild animal specimens NOT requested by an MOH.
<b>Nova Scotia Department of Agriculture (NSDA)</b>	<p>If receive notification of human exposure forward person to NSHA, PH.</p>	<p>Ensure on-call system in place.</p> <p>Arrange for staff to be present to meet DLF staff to accept specimen.</p>	<p>Process domestic, semi-domestic, feral, farm and wild-farmed animal specimens for shipping according to Transportation of Dangerous Goods guidelines.</p> <p>Ship package to CFIA laboratory, Ottawa for testing.</p>	Forward results to the submitting MOH.	N/A



**APPENDIX D:  
Contact Information for the Department of Lands and Forestry,  
Nova Scotia Department of Agriculture, Medical Officers of Health, and  
Public Health in the NSHA**

**DLF DISTRICT SUPERVISOR or AREA SUPERVISOR**

<b>Western</b>	LUNENBURG	902-634-7555
	LAWRENCETOWN	902-584-2229
	DIGBY ( <i>Cornwallis</i> )	902-638-2385
	SHELBURNE	902-875-2501
	MILTON	902-354-3462
	KENTVILLE	902-679-6097
	TUSKET	902-648-3540
<b>Central</b>	WINDSOR	902-798-2016
	OXFORD	902-447-2115
	SHEET HARBOUR	902-885-2377
	McLELLAN'S BROOK	902-922-4020
	WAVERLY	902-861-2560
	MIDDLE MUSQUOBOBOIT	902-384-2290
	JEDDORE	902-889-2332
	HANTS EAST ( <i>Shubenacadie</i> )	902-758-3437
	BIBLE HILL	902-893-5620
PARRSBORO	902-254-3241	
<b>Eastern</b>	STILLWATER	902-522-2024
	WHYCOCOMAGH	902-756-2339
	GUYSBOROUGH	902-533-3503
	ANTIGONISH	902-863-4513
	COXHEATH	902-563-3370
	ST. PETER'S	902-535-2032
	BADDECK	902-295-2554

AFTER HOURS: 1-800-565-2224

**Department of Agriculture Animal Health Laboratory**

**Tel: 902-893-6540**

[after hours a message will lead the caller to phone a cell (902-956-0028)].

**Fax: 902-895-6684**

**Civic:** Hancock Veterinary Building  
(Dalhousie Agricultural Campus)  
65 River Road  
Bible Hill, Nova Scotia  
B2N 2P3

	<b>NORTHERN ZONE</b>	<b>EASTERN ZONE</b>	<b>CENTRAL ZONE</b>
<b>Annapolis Valley</b> Tel: 902-542-6310 Fax: 902-542-4429	<b>Colchester-East Hants</b> Tel: 902-893-5820 Fax: 902-893-2614	<b>Cape Breton</b> Tel: 902-563-2400 Fax: 902-563-2005	<b>Halifax</b> Tel: 902-481-5800 Fax: 902-481-5889
<b>South Shore</b> Tel: 902-543-0850 Fax: 902-527-4208	<b>Cumberland</b> Tel: 902-667-3319 Fax: 902-893-2614	<b>Guysborough</b> Tel: 902-867-4500 Ext 4800 Fax: 902-863-5111	
<b>South West</b> Tel: 902-742-7141 Fax: 902-742-3083	<b>Pictou</b> Tel: 902-752-5151 Fax: 902-893-2614	<b>Antigonish</b> Tel: 902-867-4500 Ext 4800 Fax: 902-863-5111	

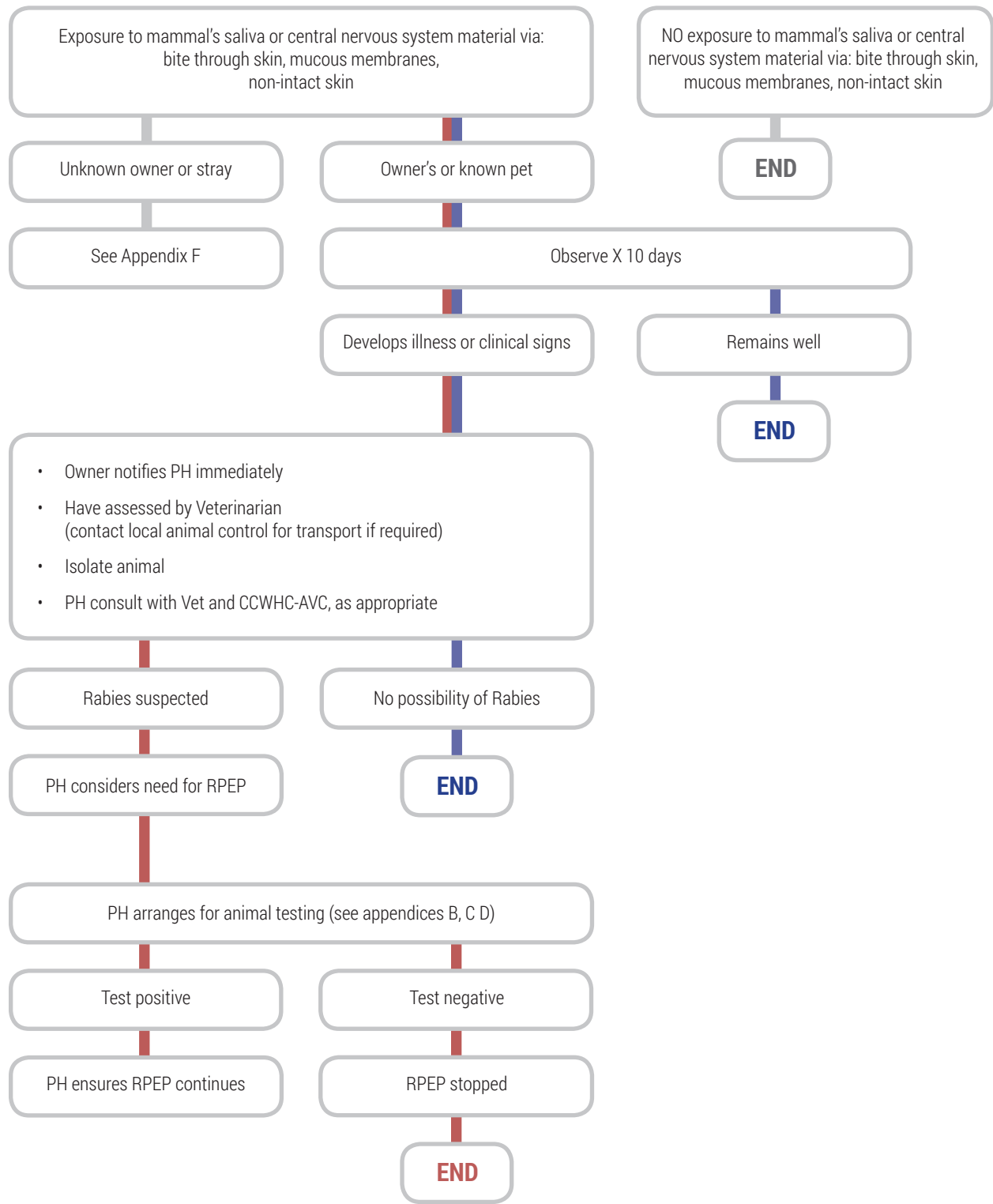
**After hours service at the Animal Health Laboratory:**

- The cell phone number provided above is managed by an administrative support person or a summer student who will then relay the message to the pathologist on-call.
- Although CFIA performs rabies testing on weekends and holidays, there is no mechanism in place to ship samples from the Animal Health Laboratory to CFIA during such times. Emergency submissions can be received, and samples can be processed but will not be shipped until the next business day.
- After hours service as described above, is provided from 8:30-4:30 on weekends and holidays.
- **Medical Officers of Health:** During regular business hours you can reach the MOH by phoning the public health office:

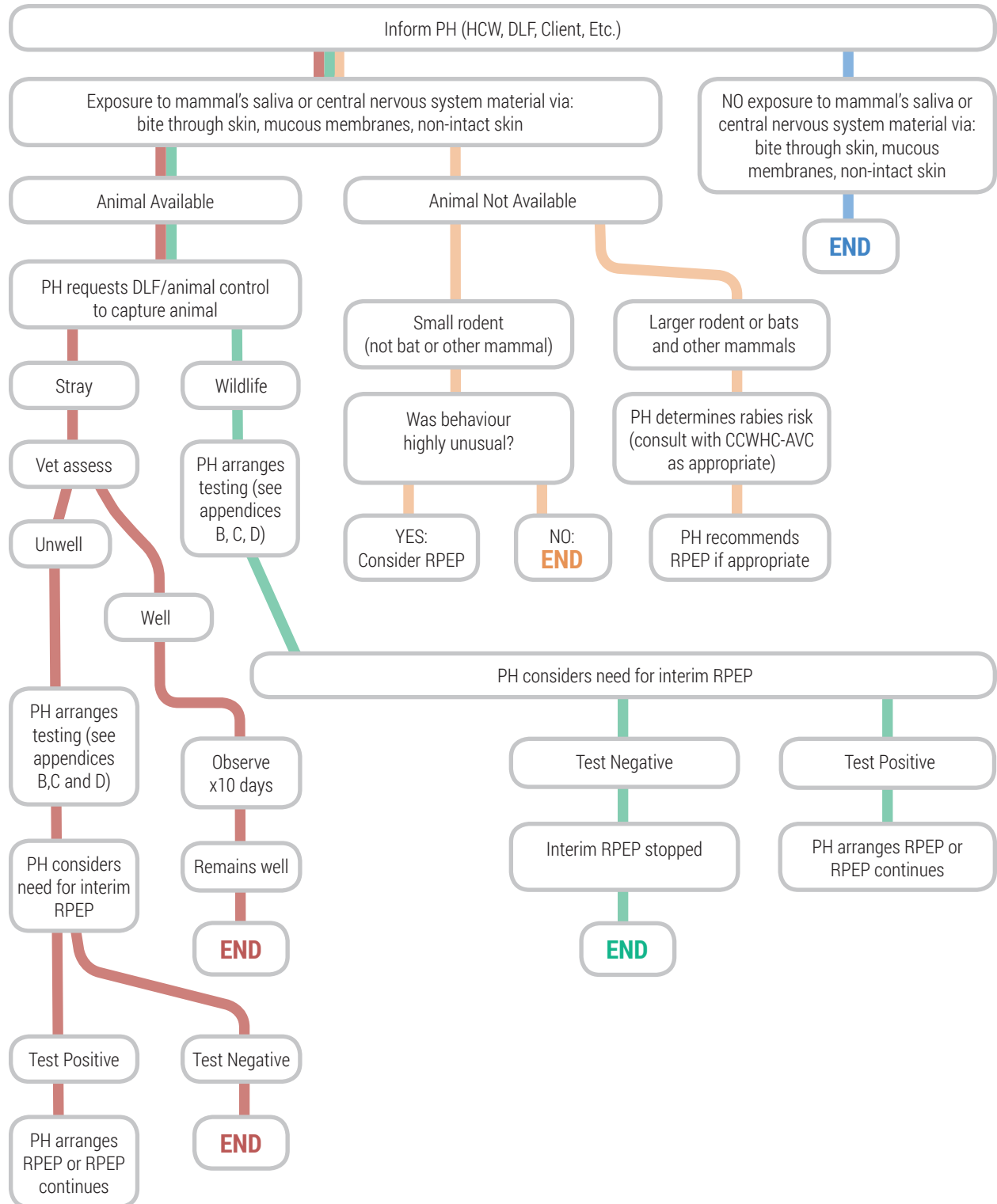
**URGENT AFTER-HOURS CASES**, call the on-call MOH by phoning QEII Locating at 902-473-2222.

## APPENDIX E:

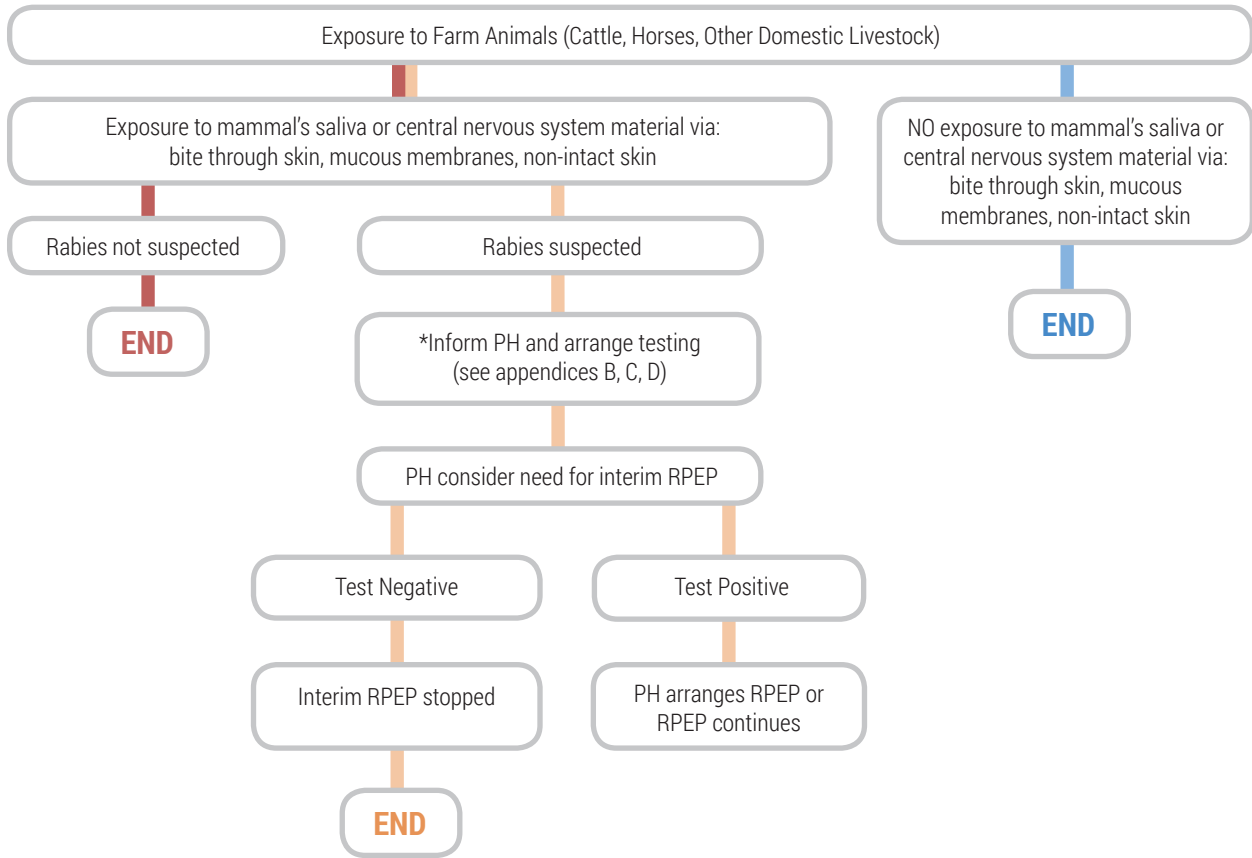
### Algorithm: Exposure from Owner's or Other Known Domestic Pet



**APPENDIX F:**  
**Algorithm: Exposure to Wildlife (including Feral and Wild-Farmed) or Semi-Domestic (Stray) Animals**



**APPENDIX G:**  
**Algorithm: Exposure to Farm Animals (domesticated)**



\*If PH involvement, PH consult with NSDA as appropriate. A veterinarian assessment may be considered at that time.

# APPENDIX H: Rabies: How to assess animal bites OR concerns about rabies exposure

(available online: [novascotia.ca/dhw/CDPC/info-for-professionals.asp](http://novascotia.ca/dhw/CDPC/info-for-professionals.asp))

## Rabies

### How to assess animal bites OR concerns about rabies exposure

**Step 1. Treat wound and administer tetanus vaccination, if required.<sup>1</sup>**

**Step 2. Assess risk for rabies exposure.**

- Was patient exposed to mammal's saliva or central nervous system material via:
  - bite through skin?
  - mucous membranes?
  - non-intact skin?
- Did a bat land on or touch the patient?

If answer is **YES** to any one of these, go to **Step 3.<sup>2</sup>**  
 If answer is **NO** to both scenarios, no further action required.  
 Exposure to a mammal's blood, urine, feces, or a skunk's spray does not pose a risk of exposure to rabies.

**Step 3. Assess action required.**

**Pet**

- Dog, cat, or ferret

**Animal well and behaving Normally**

Advise the patient to ensure the Pet is observed for 10 days  
 If the animal is not available for observation (e.g. unknown owner), follow the steps under "Other mammal"

**Animal ill or Behaving abnormally**

Advise patient

- that the pet must be assessed by a veterinarian *and*
- to call Public Health

**Animal still healthy after 10-day period**

No action required

No risk of rabies. Remind owner to keep their pet's vaccinations up to date.<sup>3</sup>

**Animal ill or behaving abnormally during 10-day period**

As soon as symptoms appear, advise the patient

- that the pet must be assessed by a veterinarian *and*
- to call Public Health.

**Veterinarian will contact Public Health immediately if rabies is suspected.**

Public Health will arrange for:

- Testing of the animal, if appropriate
- Patient to get rabies vaccine and rabies immune globulin, if needed.

**Small rodents**

- Rat, rabbit, hamster, mouse, etc.

Risk very low; not known to transmit rabies to humans in North America.

No action required unless behavior is highly unusual, in which case call Public Health

**Other mammal**

- Bat, direct contact only
- Wild animal
- Farm animal
- Other mammal
- Pet (unavailable or owner unknown)

**Call Public Health promptly.**

**Bat<sup>4</sup>**

Advise patient to capture the bat if it can be done safely.<sup>5</sup>  
 If a bat touches or lands on a patient a bite may occur. Bites leave small marks that are difficult to see.

**Other**

When appropriate, Public Health will make arrangements for the assessment of the animal.

**Public Health will:**

- Arrange for testing of animal, if appropriate.
- Assess whether rabies vaccine and rabies immune globulin are needed and arrange for the patient to receive these.

<sup>1</sup> See *Tetanus Prophylaxis in Wound Management* poster.  
<sup>2</sup> Untreated rabies in humans is almost universally fatal.  
<sup>3</sup> Pets properly vaccinated against rabies rarely develop rabies.  
<sup>4</sup> Bats are the only known source of rabies in Nova Scotia. Bats may transmit rabies to humans, unvaccinated domestic animals, and wild animals. See Public Health *Bats and Rabies* pamphlet.  
<sup>5</sup> The *Bats and Rabies* pamphlet outlines how to safely capture a bat.

If the patient is uncomfortable with contacting a pet owner, contact Public Health.  
 If there is uncertainty about direct contact with a bat, contact Public Health.

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**If you have further questions about assessing animal bites or administering Rabies Immune Globulin:**

Call Public Health during regular business hours; if after hours, wait until next business day.

For **URGENT AFTER-HOURS CASES**, call the on-call Medical Officer of Health through QEII Locating at 902-473-2222.

**Public Health:**

<b>WESTERN ZONE</b>	<b>NORTHERN ZONE</b>	<b>EASTERN ZONE</b>	<b>CENTRAL ZONE</b>
<b>Annapolis Valley</b>	<b>Colchester-East Hants</b>	<b>Cape Breton</b>	<b>Halifax</b>
Tel: 902-542-6310	Tel: 902-893-5820	Tel: 902-563-2400	Tel: 902-481-5800
Fax: 902-542-4429	Fax: 902-893-2614	Fax: 902-563-2005	Fax: 902-481-5889
<b>South Shore</b>	<b>Cumberland</b>	<b>Guysborough and Antigonish</b>	
Tel: 902-543-0850	Tel: 902-667-3319	Tel: 902-867-4500 Ext 4800	
Fax: 902-527-4208	Fax: 902-893-2614	Fax: 902-863-5111	
<b>South West</b>	<b>Pictou</b>		
Tel: 902-742-7141	Tel: 902-752-5151		
Fax: 902-742-3083	Fax: 902-893-2614		



[novascotia.ca/dhw](http://novascotia.ca/dhw)

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